

UKCS workforce dynamics: the skills landscape 2019-2025.

RGU OIL AND GAS INSTITUTE.

2019



UKCS

WORKFORCE DYNAMICS:

The Skills Landscape
2019 - 2025



FOREWORD

Welcome to the 2019 Skills Landscape report, part of the OPITO UKCS Workforce Dynamics series. OPITO is committed to working with industry and governments to ensure a safe and competent energy workforce, and last year we published a review of the UKCS skills requirements to 2035. The report identified high-level trends in the workforce and highlighted significant growth in new job areas driven by advances in technology.

This follow-up study, focusing on an intermediate timeframe to 2025, explores the dynamics of the changing skills landscape and considers how industry, the workforce, governments and educational institutions might respond.

We know that by 2025 there will be approximately 4,500 new people employed in roles that don't currently exist. These new roles will require a different set of skills and competences, which means we need to look at ways of reskilling our current workforce and consider how we compete with other industries for future talent. In the next six years, we will see the introduction of new jobs in areas such as data science, automation and new materials.

A significant proportion of the current workforce will still be working in the sector in 2025. Therefore, we also need to consider how to upskill to allow people to do the same job, but more efficiently. In building this report, Robert Gordon University's (RGU) Oil & Gas Institute surveyed around 1000 people across 140 organisations. Their responses highlighted that people want short but formally structured "nuggets" of learning, increasingly delivered through simulation.

This report is designed to ensure the sector has access to the skills and competences to support its longer-term ambitions. Built on four strategic components, Retain, Retrain, Recruit and Renew the report addresses the need to design and adapt our talent development systems for both existing and new participants.

\\ A significant proportion of the current workforce will still be working in the sector in 2025 \\

This strategy provides a framework for employers, governments, agencies, education institutions and training providers to help effectively plan the skills and capabilities in the sector.

We are ready to take on these challenges and OPITO is already working with various stakeholders to deliver a route map of actions which will support the sector in ensuring access to people with the right skills to support Vision 2035 and our long-term ambitions. We will lead the coordination of this route map on behalf of the industry and bring partners together to deliver on the actions.



John McDonald
CEO, OPITO



Paul de Leeuw
Director, Oil and Gas Institute – Robert Gordon University

EXECUTIVE SUMMARY

UKCS OIL & GAS SKILLS ARE CHANGING



CHANGING WORKFORCE –
Increased focus on Vision 2035 and a multi-skilled energy workforce



NEW CAPABILITY –
Increased requirement for a more flexible, multi-skilled and technology-enabled workforce



CHANGING LEARNING APPROACH –
Increased requirement to supplement traditional teaching methods with simulation, augmented reality, virtual reality and online training



CHANGING BUSINESS MODELS –
Impact of new technology & innovation will change business models and requires new supply networks

OPPORTUNITY FOR THE UK



UK –
Delivery of Vision 2035 and diversification of oil and gas companies into broader energy activities will support c. 155,000 UKCS jobs by 2025



GLOBAL –
Leveraging the export potential of the UK supply chain is a key part of Vision 2035

COLLABORATION IS KEY



GOVERNMENTS, INDUSTRY & AGENCIES –
UKCS Skills Strategy is a key part of the Vision 2035 roadmap. Specific initiatives to be progressed from 2019 onwards



RECRUITMENT & TRAINING PROVIDERS –
Requirement for increased visibility of future people and skills demand. Increased focus on, and support for, new, innovative and demand-led learning methods

FOUR STRATEGIC COMPONENTS



RETAIN
Upskill and reskill existing workforce; >80% of 2019 workforce will still be in the sector by 2025



RETRAIN
Address upskilling requirements in new ways of working, enterprise skills, internationalisation, change management, technology & data skills



RECRUIT
Increase talent attraction activity for the >25,000 people required by 2025



RENEW
Secure access to the new technology & innovation skills required for the sector

CHANGING SKILLS LANDSCAPE

Wherever you look, change is happening: in society, in business and in the way we all live and work. In recent years, virtually every industrial sector around the world has been experiencing rapid and sometimes disruptive change. Technology and new ways of working are transforming industries and businesses.

Similar change is already happening across the oil and gas industry. Technology, innovation, the transition to a lower carbon future, increased internationalisation, and changing business models will all play their part in re-shaping the oil and gas industry. With new technological skills becoming part of day-to-day life, the sector will need an increasingly flexible, multi-skilled and technology-enabled workforce.

This report highlights a significant upskilling requirement for the existing workforce in the areas of enterprise skills, new ways of working, internationalisation, general technology and data skills. Upskilling refers to improving the skills of the workforce to do their current job better and more efficiently, whereas reskilling is focused on preparing the workforce for different roles and responsibilities.

\\ Technology and new ways of working are transforming industries and businesses \\

There will also be new demand for expertise in areas such as low carbon energy, data science, data analytics, artificial intelligence, machine learning, robotics, material science, remote operations, and cyber security. This research also highlights the additional skills requirements in areas such as change management, control of change, project management and the social aspects of change.

While many will benefit from the opportunities created, it has the potential to be disruptive for others. Equipping and upskilling people already working in the industry to adjust to the rapidly changing environment and attracting people with different skill sets and new ways of thinking will be a key priority for the oil and gas sector going forward.



CHARACTERISATION OF THE UKCS WORKFORCE IN 2025

OPITO published the UKCS Workforce Dynamics: Shaping the Skills of Tomorrow in May 2018, highlighting the changing skills and capability requirements over the next 20 years for the UK oil and gas industry. Over 40,000 new people are likely to be required to join the industry in the next 20 years, of which around 10,000 people will need to be recruited into roles that do not currently exist.

\\ over 25,000 additional people will be required by 2025 (out of 40,000 by 2035), with around 4,500 in roles that do not currently exist (out of 10,000 by 2035) \\

The characterisation of the 2025 workforce was based on the comprehensive data set collected in 2018/19. The workforce data set now comprises c. 35,000 UKCS roles, representing c. 50% of the operator roles in the UKCS, c. 16% of the supply chain roles and over 20% of the total UKCS direct and indirect workforce. In addition, c. 1,000 people from over 140 different organisations across 22 job families¹ completed the UKCS skills survey. The data collected in the survey comprised detailed information in terms of key changes

anticipated in the areas of leadership, business and technical skills. The survey data was subsequently analysed by type of role, type of organisation, age, gender and by job family.

Based on the report from May 2018, successful progress towards delivering Vision 2035² and the diversification of oil and gas companies into broader energy activities, the 2025 UKCS oil and gas workforce is anticipated to be around 155,000 people (versus a 170,000 workforce baseline in 2018)³. Taking into account ongoing attrition and retirement, it is estimated that over 25,000 additional people will be required by 2025 (out of 40,000 by 2035), with around 4,500 in roles that do not currently exist (out of 10,000 by 2035). In addition, there is the need to upskill and reskill the existing workforce to ensure that people have the requisite skills for success.

1. A job family is a series of related jobs within a certain discipline or associated with related activities

2. Vision 2035 captures the ambition of the industry to produce an additional 3 billion barrels of oil and gas by 2035 and to double the UK's share of the global technology and services market by 2035

3. <https://downloads.opito.com/downloads/ukcs-workforce-dynamics-review.pdf?mtime=20181122170317> – scenario 3

\\ Vision 2035 offers a solution to the UK's dual energy challenge – one of the biggest challenges of our time. With the right support, by 2035 our industry will continue to provide the secure and affordable domestic oil and gas that the UK needs, while supporting the energy transition through our people, expertise and infrastructure \\

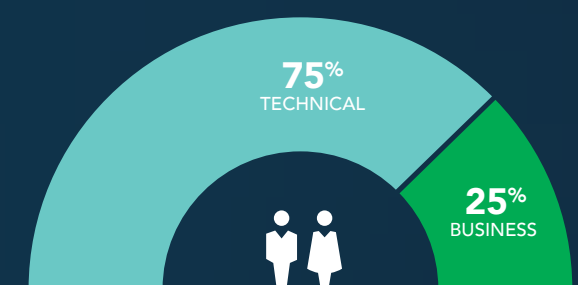
Supporting a projected UKCS average production of over 1.2 million barrels of oil equivalent per day in 2025⁴, c. 75% of the UKCS workforce are expected to be in technical roles, with the remaining 25% in business-focused roles. It is estimated that over 80% of the 2025 workforce is currently already employed in the industry. The remaining part will be new people entering the sector, replacing both existing skills and meeting the demand for new skills.

The 2025 workforce continues to be dominated by people working in the supply chain (c. 91%), with the operator community representing around 9%. The top six job families – Operations, Engineering, Technicians, Projects, Procurement & Supply Chain Management (PSCM) and Finance – are expected to account for over 70% of all the roles in the industry (figure 1).

Figure 1 – UKCS 2025 workforce characterisation



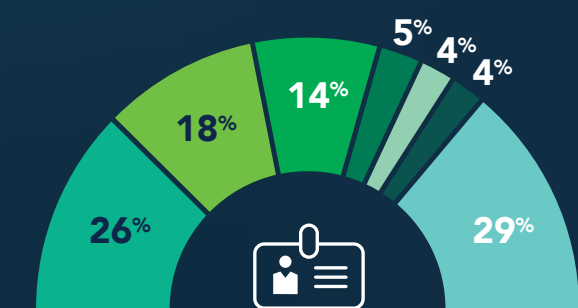
2025 WORKFORCE SPLIT
BY OPERATOR / SUPPLY CHAIN



2025 WORKFORCE SPLIT
BY TECHNICAL / BUSINESS



2025 WORKFORCE SPLIT
BY EXISTING / NEW



2025 WORKFORCE SPLIT
BY JOB FAMILY

● OPERATIONS ● ENGINEERING ● TECHNICIANS
● PROJECTS ● PSCM ● FINANCE ● OTHERS

4. <https://www.ogauthority.co.uk/data-centre/data-downloads-and-publications/production-projections/>

TECHNOLOGY & INNOVATION

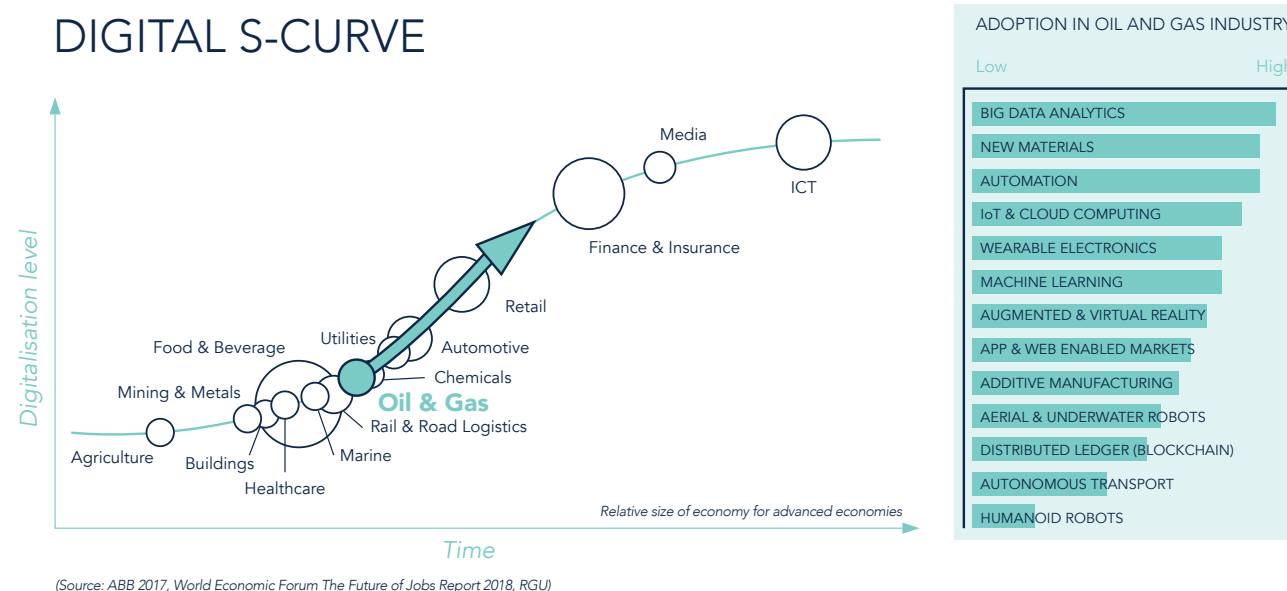
WILL CREATE A WORLD OF NEW OPPORTUNITIES

The 4th industrial revolution is already affecting businesses and organisations across industrial sectors. The impact of technology and innovation, rapidly changing business models and new ways of working are creating new opportunities, requiring new skills and competencies. At the same time, a number of traditional skills are declining, requiring people to change jobs, to upskill or to reskill.

The oil and gas industry has a long and successful track record of innovation and technology development. However, there is scope to increase the level of technology and digitalisation⁵ and accelerate the pace of deployment in the sector. Significant progress has already been made through the work done by the Oil and Gas Technology Centre (OGTC) and the Oil and Gas Innovation Centre (OGIC).

A number of other sectors have already made this journey, often driven by necessity, competitive pressures or by changing market dynamics. Figure 2 illustrates the relative position of different industrial sectors in terms of digitalisation and some of the key technology areas identified for the oil and gas industry to move up the technology curve in the next five years.

Figure 2 – Digitalisation S-curve for different industries



5. The process of converting information from a physical format into a digital one and the subsequent leverage to improve business processes

UTILISING AR & VR DEVELOPMENTS

The oil and gas industry has embraced both Augmented Reality (AR) and Virtual Reality (VR) operationally and as part of efficiency activities over the past few years.

AR has been introduced as part of maintenance activities at oil and gas facilities for example, where staff use headsets, 'smart' helmets and 'smart' goggles to link directly to experts who may be situated at an international office. The remote expert can guide the staff member based on site through the activity with ease as the technology allows them to have direct access through audio and video. Utilising this technology could not only reduce operational downtime but cut down on significant travel expenses.

Last year, research conducted by ABI Research showed that the AR revenue for the energy and utilities sector will be a US\$18billion market by 2022 with platform and licensing, as well as smart glasses hardware, taking a majority share.

As new roles and technologies are introduced over the next six years, skills will naturally change and adapt overtime as we learn to utilise these efficiencies.

Source: <https://oilprice.com/Energy/Energy-General/Augmented-Reality-Is-A-Game-Changer-For-Oil-Gas.html>

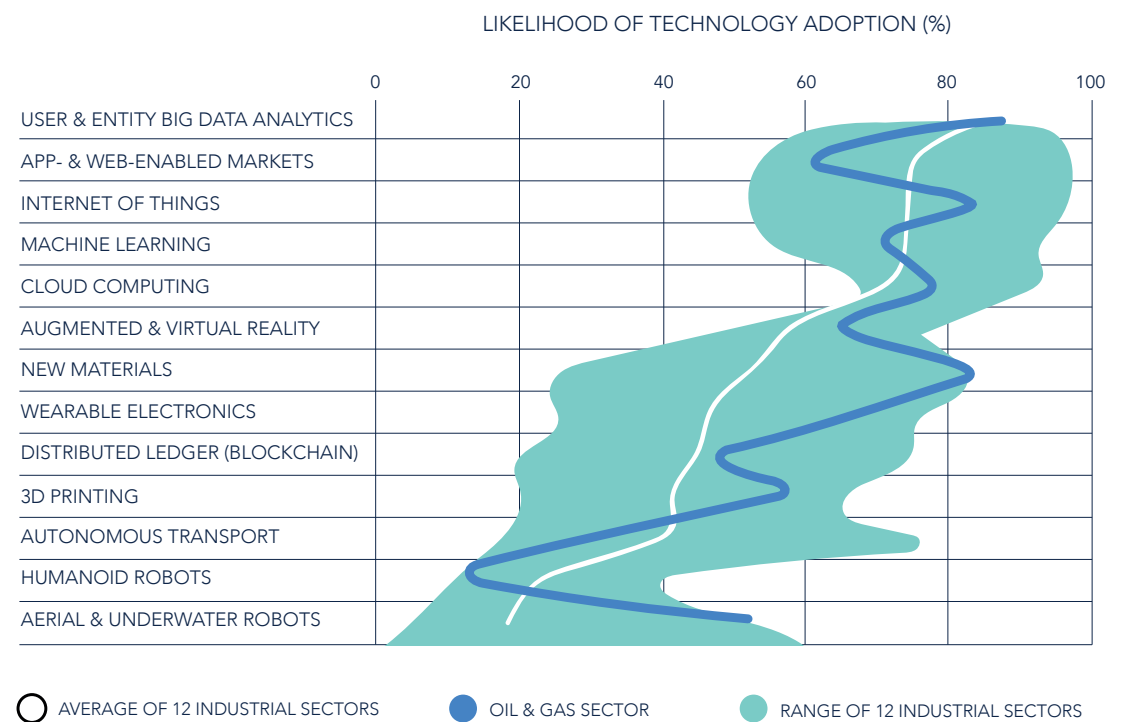
Source: <https://www.ge.com/reports/move-pokemon-ge-testing-augmented-reality-helmets-qatars-giant-sandbox/>



SHIFT IN COMPETITION FOR NEW SKILLS

Although the UK's oil and gas industry is one of the largest industrial sectors in the country, the competitive environment for skills is likely to intensify over the next six years. Comparing the likely technology adoption of the oil and gas industry to 11 other industrial sectors, and given that many of the highlighted skills are not energy industry-specific, the industry will have to compete for access to these critical skills (figure 3). It is also expected that new companies will enter the market, providing services to a range of industries and customers.

Figure 3 – Technology adoption focus for different industry sectors



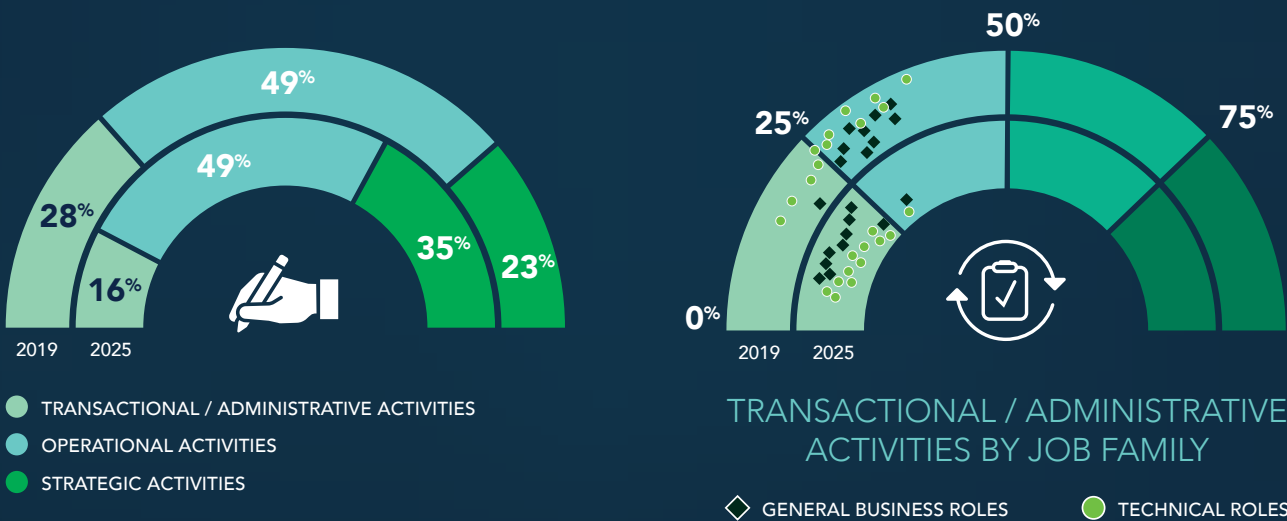
Source: World Economic Forum - The Future of Jobs Report 2018; industrial sectors include: Automotive, Aerospace, Supply Chain & Transport, Aviation, Travel & Tourism, Chemistry, Advanced Materials & Biotechnology, Consumer, Energy Utilities & Technologies, Financial Services & Investors, Global Health & Healthcare, Information & Communication Technologies, Infrastructure, Mining & Metals, Oil & Gas and Professional Services

SHIFT TOWARDS

INCREASED PRODUCTIVITY & HIGHER VALUE ACTIVITIES

Although the oil and gas industry operating in the UKCS has significantly improved its efficiency and productivity in recent years, a significant proportion of people's time involves conducting transactional activities. Transactional activities are characterised as repeat and routine activities. The research conducted for this report illustrates that across all the job families c. 28% of the workforce's time on average is currently spent on transactional activities (figure 4). Some of the transactional tasks are likely to be automated over the next decade, shifting activity towards more operational and strategic activities, thereby increasing efficiency and productivity. Significant upskilling and reskilling of the workforce will be required for this productivity opportunity to be realised.

Figure 4 – Shift from transactional activities towards more strategic activities



Based on the survey results, the time spent on transactional activities by job family varies considerably, between 18-40%. The job families currently most exposed to transactional activities are Logistics, Finance, Drilling & Wells, HSE, Facilities Management and HR. The survey results also illustrate that across all job families, the workforce expects the amount of transactional activity to reduce by c. 40%+ between 2019 and 2025.

Both the UK and Scottish Governments have proposals to support industries in this area

through the National Retraining Partnership and Future Skills Action Plan. OPITO will continue to engage with both governments to ensure the needs of industry are reflected in these plans.

In addition, OPITO is also proposing an energy industry focused Career Transition Programme. This programme will seek to identify specific roles with the highest likelihood of change and focus reskilling activities on those working in those roles to prepare them for the future.

SHIFT TO NEW WAYS OF DECISION MAKING & LEADERSHIP

Although oil and gas companies operating in the UKCS have a long track record of delivering innovative solutions to drive efficiency, the pace of change is accelerating.

With around 75% of all managers and team leaders in the UKCS over 40 years of age, and around 40% over the age of 50 (figure 5), there is a need to rapidly upskill staff in leadership roles. This will ensure informed and considered decision making with respect to new technology, change management and future skills requirements.

In Scotland, emerging energy leaders are already receiving support through the Scottish Enterprise-led Future Leaders Programme and future versions of the programme should ensure that technology and its applications are a focus to facilitate an awareness and broad understanding by emerging leaders. It will also be critical that universities and other bodies provide additional learning for leaders in this area.

\\ Teams will need to be more flexible and nimble compared to what we see today \\

The application of new technology will also enable far more adaptable and agile work environments, in contrast to the traditional, matrix-type organisations. Teams will need to be more flexible and nimble

compared to what we see today. In addition, the combination of real-time data analytics, artificial intelligence, and cognitive reasoning will likely shift insight and decision-making deeper into organisations.

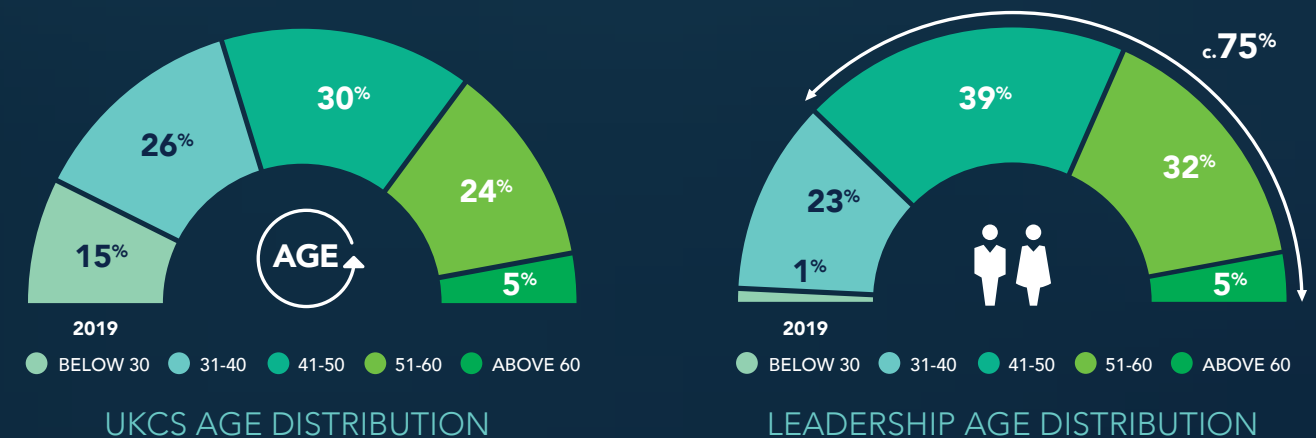
The impact of new technology and changing business models will change the expectations on people in leadership positions and a degree of upskilling is envisaged for supervisory, management and leadership positions to prepare them for these new business dynamics.

Topical leadership training on managing change, implementing new technology and establishing new ways of working will be required. This will provide an opportunity for training and education providers to more closely align their curricula, training offer and delivery methods.

The route map proposes the creation of a Technology Leadership Programme, to upskill existing industry leaders and middle management. The aim of this programme is to increase understanding of the potential benefits of new technologies and how they can be applied within their own organisation, and across industry.



Figure 5 – Shift to new ways of decision making – age profile 2019



SHIFT TOWARDS

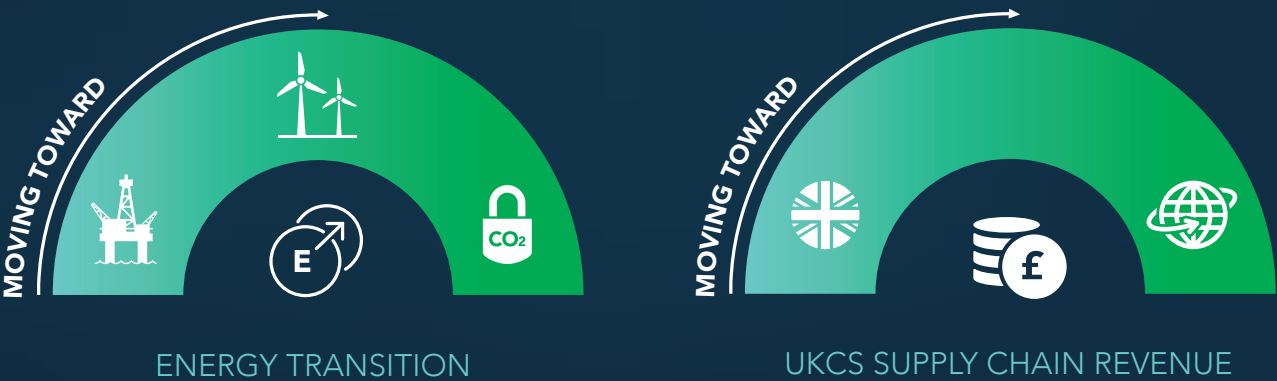
A LOWER CARBON FUTURE AND INCREASED INTERNATIONALISATION

With both the UK and Scottish Governments committed to delivering the 2030 targets set by the Paris Climate Change Agreement, significant change is expected over the next decade as the UK transitions its energy system (figure 6). Combined with the pathway towards Vision 2035, the focus on a lower carbon future and the potential for increased international activity for the UK supply chain, will significantly impact the future skills requirements for the sector.

Based on the Offshore Wind Sector Deal secured in March 2019, UK offshore wind installed capacity has the potential to grow from over 8 gigawatts in 2019 to around 30 gigawatts by 2030. UK offshore wind projects currently being installed and operated have around 30% UK local content (components manufactured in the UK). By continuing to increase UK local content in areas such as blade and tower

manufacture, cable supply, operations and maintenance, and by developing strengths in other areas, including installation and foundation manufacture, the Offshore Wind Sector Deal anticipates around 60% UK content, up to 20,000 new skilled jobs and global exports of £2.6bn by 2030⁶.

Figure 6 – Increased focus on energy diversification and internationalisation



Given the clear synergies between the different energy sources, it is expected that there will be an increasing skills and technology convergence between the various parts of the energy sector

over the next decade. This will create significant new opportunities for supply chain companies and the workforce to support a wider range of energy projects and operations.

6. <https://www.gov.uk/government/news/offshore-wind-energy-revolution-to-provide-a-third-of-all-uk-electricity-by-2030>

OPITO is currently working on a skills mapping initiative to help ensure that, as more companies diversify, the workforce has the ability to operate across the energy mix, both in the UK and internationally.

The project, facilitated by the UK Government's Department for Business, Energy and Industrial Strategy with representatives from offshore and onshore oil and gas, nuclear and renewables industries, aims to identify skills across similar roles. The objective is to help develop plans for upskilling existing personnel and pinpointing specifications for new candidates. This work will also seek to complement the commitment made in the Offshore Wind Sector Deal to deliver an Energy Skills Passport.

From an internationalisation perspective, Vision 2035 assumes a doubling of the UK's share of the global technology and services market by 2035. Based on the latest EY Oil Field Services Review (January 2019)⁷, exports from the UK oil and gas sector were around £10.6 billion in 2017, with exports representing c. 39% of turnover. With the drive to deliver Vision 2035, it is anticipated that by 2025, a significant part of the UKCS workforce will be focused on new exports and energy diversification opportunities.

\\ Vision 2035 assumes a doubling of the UK's share of the global technology and services market by 2035 \\

To support the delivery of the energy transition and Vision 2035, OPITO will explore the development of a multi-skilled energy apprenticeship.

7 – <https://www.ey.com/uk/en/industries/oil---gas/ey-review-of-the-uk-oilfield-services-industry-january-2019>

SHIFT TOWARDS

A MORE GENDER BALANCED INDUSTRY

Progress has been made in recent years to improve gender diversity in the UKCS. However, the industry still continues to have a bigger gap compared to other sectors. Around 25% of the current workforce in the UKCS is female.

\\ Gender balance will likely shift from 25% females in the sector in 2019 to c. 30% by 2025 \\

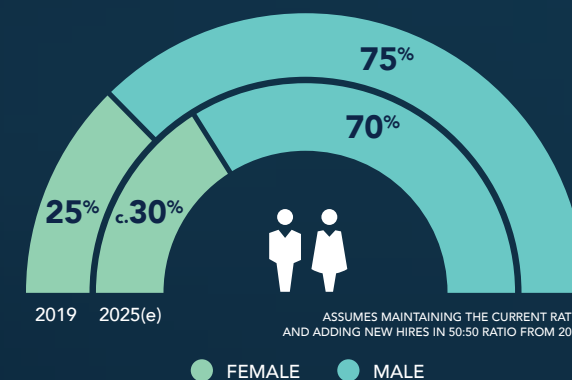
On the basis that over 80% of staff currently working in the UKCS will still do so by 2025 and on the assumption that there will be an equal balance for those joining the sector between 2019 and 2025, it is projected that the

gender balance will likely shift from 25% females in the sector in 2019 to c. 30% by 2025.

With the increased focus on Science, Technology, Engineering and Mathematics (STEM) subjects in schools, HR processes and activities to encourage increased recruitment and retention of women, and the creation of new, business-type roles in the sector, it is anticipated that the gender balance will improve post 2025.



Figure 7– UKCS gender balance 2019-2025



A number of actions in the route map address young people's current and varied perceptions of the industry. OPITO will also work with partners to develop a programme of engagement, which promotes both careers in the energy industry and STEM subjects. In addition, the announcement recently made by Oil & Gas UK to launch an industry diversity network to encourage collaborative approaches to inspire talent, will also aid effort in ensuring diversity throughout the industry.

THE CHANGING UKCS

SKILLS REQUIREMENTS BY 2025

A significant amount of research has already been published on future skills by a wide range of organisations. Building on recent research, this report focuses on how to translate generic future skills areas (such as problem solving, social intelligence and technology and innovation skills) into specific focus areas for the oil and gas sector.

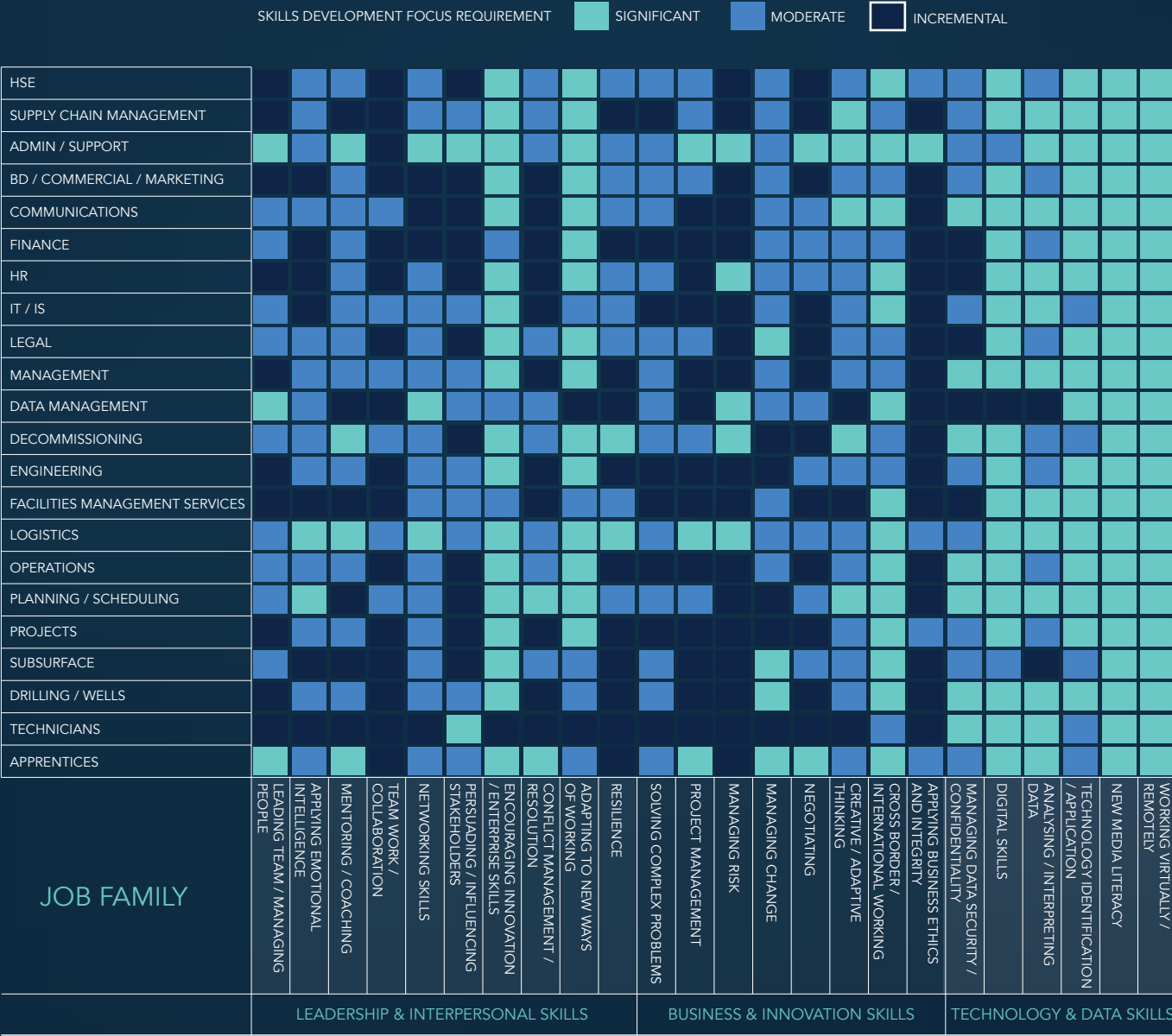
Figure 8 – UKCS oil and gas skills survey – areas for upskilling



To help determine the changing skills requirement for the existing workforce on the UKCS between 2019 and 2025, the responses of c. 1,000 people from over 140 organisations to a detailed UKCS skills survey were analysed. The research highlights the requirements for significant change in the areas of leadership, business and technical skills for the UKCS between 2019 and 2025 (figure 8). The gap between the lines in the graph describes the areas of additional focus required; the greater the space, the more focus is required.

Analysing the survey data by job families shows a similar picture, with a significant upskilling requirement in the areas of enterprise skills, new ways of working, internationalisation, general technology and data skills (figure 9).

Figure 9 – UKCS oil and gas skills survey – areas for upskilling





THE DIGITAL TWIN

SOLVING OIL & GAS CHALLENGES

BP is investing in digital technologies that are transforming operations.

The operator's impressive virtual digital twin technology added more than 30,000 barrels of production per day globally last year.

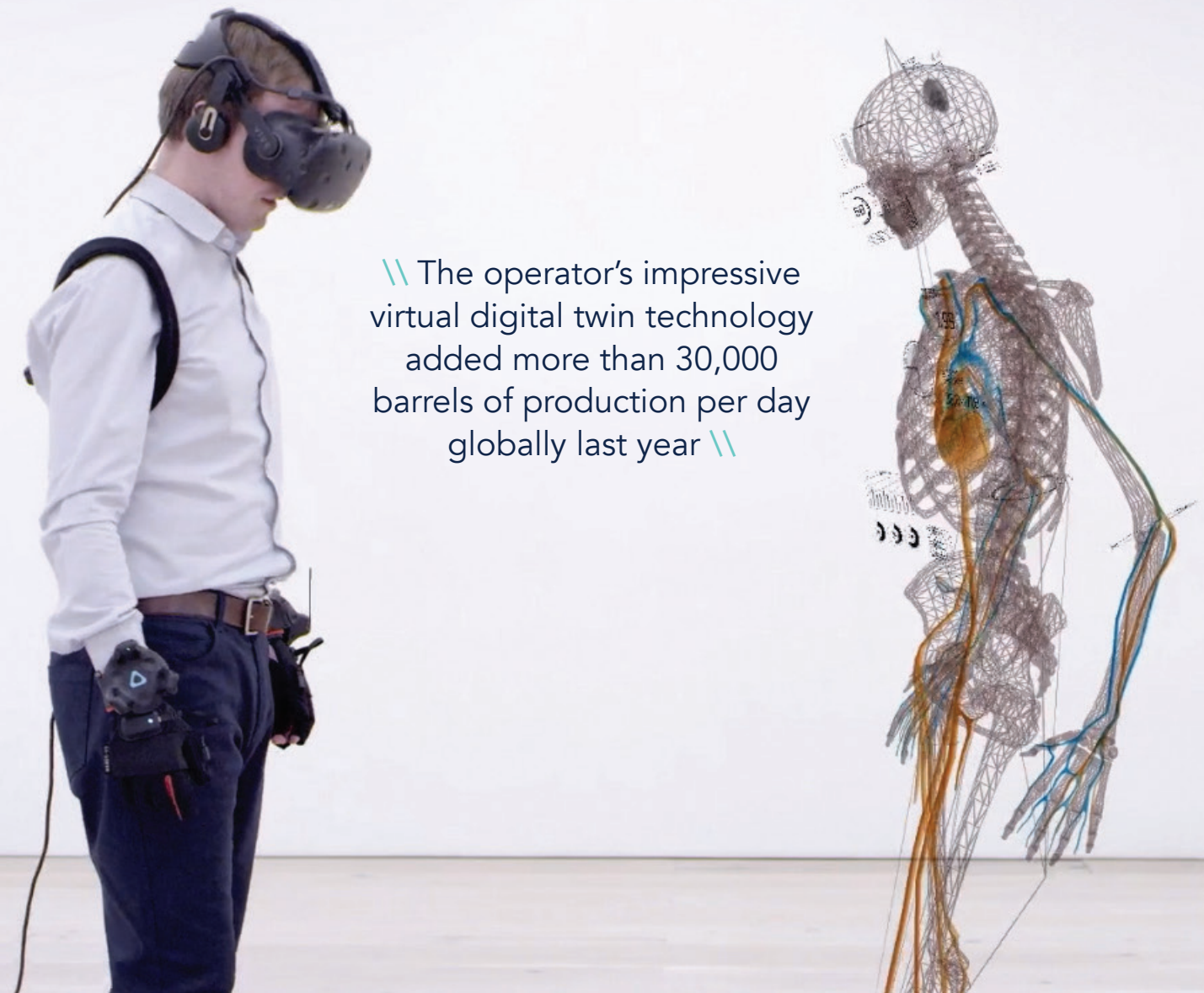
To showcase the innovation at events, delegates are invited to create a digital twin of their bodies and interact with it using virtual reality. It helps to explain the concept behind the highly sophisticated simulation and surveillance system called APEX which creates a virtual copy of BP's production systems.

There are billions, maybe even trillions, of different routes that an oil molecule can travel through a production facility. At the heart of these operations are BP's petroleum engineers, making choices that require intricate calculations to safely optimise production.

Engineers now have a digital twin they can call upon. The system recreates every element of a real-world plan in digital form.

BP's North Sea business has been at the forefront of the digital development, and the APEX system is now being rolled out to all of BP's production systems around the world.

With a digital twin, production engineers can run simulations that used to take hours in just a few minutes, helping to pin point where efficiencies can be made.



\\ The operator's impressive virtual digital twin technology added more than 30,000 barrels of production per day globally last year \\

The skills survey shows that there is no material difference in the results between operator and supply chain companies, between males and females or between different age groups. The survey data does, however, highlight the additional demand for business skills from team leaders compared to individual contributors.

Although the survey highlights that there is a clear need to upskill the existing workforce, the key focus will need to be on creating a more flexible, multi-skilled and technologically-aware workforce. For a smaller and more targeted part of the workforce, upskilling will involve the creation of super users or domain experts. A domain expert is typically a person who is an authority in a particular area or topic and who can assist a wider user base with general support.

In addition, the survey also highlights the skills requirements in areas such as change management, control of change, project management and the social aspects of change and new technology.

There is a need for education institutions and training providers to ensure courses and programmes are on offer, which develop skills in the areas outlined. With funding available to support employers in developing these types of skills, it is also important that employers face no barriers in drawing down such funds if they are to upskill their existing workforce.

NEW ROLES IN 2025

Although traditional disciplines such as subsurface, operations and projects will continue to be key, there will be significant new demand for expertise in areas such as low carbon energy, data science, data analytics, artificial intelligence, machine learning, robotics, material science, change management, remote operations and cyber security.

For the purpose of this review, it was assumed that around 4,500 people will be in new roles by 2025 that currently do not exist. Although it is challenging to predict what new roles will likely emerge, Figure 10 (below) highlights some possibilities.

Figure 10⁸– Possible future role titles

Internet of things



- IoT system anthropologists
- IoT data actuaries
- IoT security repair consultant

Machine learning



- AI business developer manager
- AI and machine learning specialist
- Quantum machine learning analyst

Additive manufacturing



- 3D material scientists
- 3D printer ink developers
- Manufacturing process consultants

Big data analytics



- Data trust officer
- Data engineer / analyst / architect
- Data ethicists
- Data broker
- Business intelligence developer
- Information research scientist
- Work gamifier

Augmented and virtual reality



- AR/VR journey builder / content writers
- UI (user interface) and UX (user experience) designer
- Avatar relationship managers
- Reality connector

8. Source: World Economic Forum The Future of Jobs Report 2018 – 'Likely or very likely' adoption as part of company's growth strategy by 2022, 162 future jobs – Futurist Thomas Frey 2014, Job of the future – Center for the future of work 2017, UK Government DDaT capability framework 2019

To ensure the industry has access to the right skills, a closer connection is required between the industry and training providers. Improved collaboration will enable the curricula and training methods to adapt more quickly to changing demands and will enable a real focus on lifelong learning.

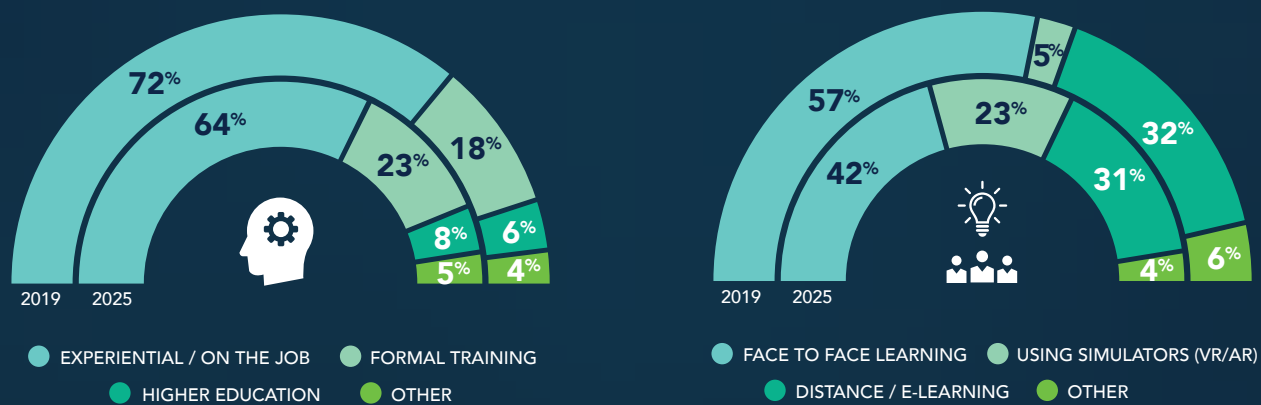
As part of the route map, OPITO will work with industry and agencies to increase the visibility of future skills demand to allow universities, colleges and training providers to more closely align their curricula, training offer and methods of delivery.

NEW INNOVATIVE WAYS OF LEARNING AND DEVELOPMENT

The combination of new technology (e.g. machine learning, artificial intelligence, expert systems) and new training methods (computer-based training, virtual and augmented reality, simulation and situational analysis training) has the potential to transform how people are going to learn and gain new skills. It also has the potential to

significantly shorten the time required for professionals to acquire the requisite skills and competencies, thus reducing the time to autonomy⁹. The survey highlights that there will be an increasing demand for simulation, virtual reality and situational awareness training, offsetting the demand for more traditional face-to-face learning methods (figure 11).

Figure 11 – Shift towards new, innovative ways of learning



In addition, some of the new skills required in the industry, such as data science, data analytics and cloud computing can be acquired faster than some of the more 'traditional' skills such as drilling engineering and geophysics. The anticipated change in terms of how people want to learn and what they are learning will require a substantial change to the existing training provisions in the UK.

As part of the route map, OPITO will review how it can streamline and enable innovative modes of delivery for training, and will continue to work with partners to ensure the Oil & Gas Technical Apprentice Programme (OGTAP) meets industry's needs. OPITO will also work with education and training providers to explore the best ways of delivering training, including through short courses and micro-certification.

AEROSPACE INDUSTRY CREATES NEW ROLES IN RESPONSE TO DIGITAL ADOPTION

The aerospace industry has been among the early adopters of digital technologies.

The sector has been using robotics and automation in assembly lines for decades, however new data solutions are supporting product performance and efficiencies in increasingly novel ways.

From artificial intelligence and machine learning for flight systems to augmented reality giving greater visibility around maintenance and repair operations, the sector has had to shift its skills requirements to adapt.

Research by Accenture with the aerospace and defence industries showed that 90% of organisations operating in the sector believe they have entered an era of technology advancement that is no longer marked by linear progression, but by an exponential rate of change. Furthermore, 68% are comprehensively investing in digital technologies as part of their overall business strategy.

One major player recently established its own 'digital factory', creating new data science roles to focus on predictive maintenance, anomaly detection and root cause analysis. When flight test specialists cannot find the cause of an aircraft engine or system problem, they turn to the experts in these new analyst roles who develop specialist algorithms to detect abnormalities.

Leading aerospace universities joined forces in 2018 to launch the National Aerospace Research Consortium (NARC) as a centralised point for university aerospace research. NARC aims to directly support UK based industry through world-class research as well as future skills development.



9. Time required to ensure individuals have the right skills, competencies and decision making capabilities to work autonomously

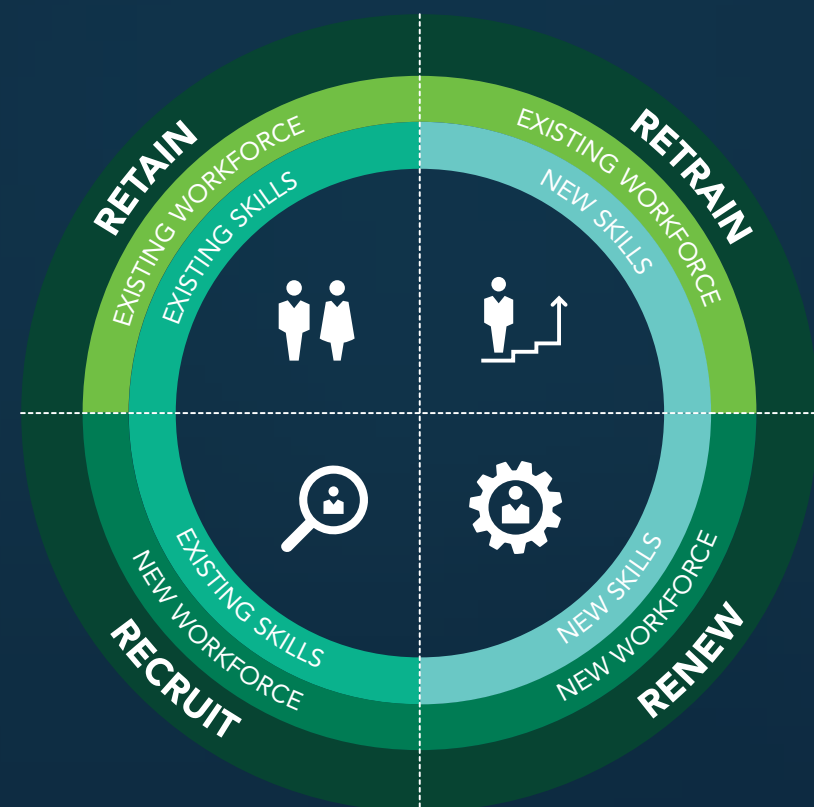
UKCS STRATEGIC COMPONENTS

As highlighted in the first UKCS Workforce Dynamics: Shaping the Skills of Tomorrow report in May 2018, over 40,000 new people are likely to be required to join the industry in the next 20 years, of which around 10,000 people will need to be recruited in technology and innovation roles that do not currently exist. By 2025, over 25,000 new people (out of 40,000) will be required, with around 4,500 in roles that do not currently exist¹⁰.

In addition, there is the need to upskill and reskill the current workforce to ensure people currently employed have the right skills for future success.

To support Vision 2035, the wider energy diversification and to ensure delivery of the skills agenda, four strategic components have been developed – Retain, Retrain, Recruit and Renew (figure 12).

Figure 12– UKCS Skills Strategy framework (4Rs)



10. Assumes successful progress towards delivering Vision 2035 and a successful diversification of the UK's supply chain into other energy sectors, thereby increasing the demand on an UK-based workforce.



Retain

Retain is focused on maintaining the current skills and capabilities within the existing workforce. The combination of attrition and continuous improvement will require ongoing training and development. With over 80% of the 2025 workforce currently already employed in the industry, this will require the continuation of existing training and development provisions, supplemented by focused leadership and development programmes.



Retrain

Retrain is focused on upskilling the existing workforce and ensuring that the skill gaps identified in the skills survey are being addressed. This includes significant upskilling in the areas of enterprise skills, new ways of working, internationalisation and general technology and data skills. The capacity to do so needs to be established as part of the route map.



Recruit

Recruit is focused on replacing the skills gap left by those leaving the industry following retirement and other industry attrition. Underpinning the activities associated with Vision 2035 and the energy diversification, around 25,000 new people will be required by 2025. Increasing the visibility on industry requirements and better co-ordination on an annual basis will have the potential to substantially improve the success in securing the requisite workforce for 2025.



Renew

Renew is focused on accessing the new skills the industry needs for the future, which includes around 4,500 people in roles that do not currently exist. Some of the Renew skills will be an integral part of the oil and gas industry, while others are more generic industry skills. The Renew part of the route map will need closer collaboration and co-ordination between government agencies, education establishments (graduate and vocational level), training providers and the industry.

\\ The UK is uniquely positioned to leverage its position as a global training and development hub and the implementation of the UKCS skills route map will strengthen that position further \\

NEXT STEPS

Action is required now to support the industry's Vision 2035 and wider energy diversification plans.

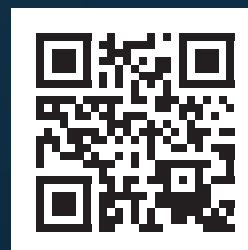
OPITO will lead the coordination and implementation of the route map, which can be accessed via the OPITO website. We will work closely with the workforce, industry, governments, agencies and training providers to review progress on a regular basis.

\\ The prize is significant; but requires close collaboration to have an effective and enduring impact \\

Taking collective responsibility will ensure people are upskilled and reskilled and the industry is in the best possible position to compete for talent to fill emerging roles.

The prize is significant; but requires close collaboration to have an effective and enduring impact.

The route map and a digital copy of this report with accompanying video can be accessed via www.opito.com or through the QR code.



Scope & methodology

Building on the 2018 UKCS Workforce Dynamics Review, OPITO in partnership with the Robert Gordon University (RGU) Oil and Gas Institute, undertook a further review to better understand the changing skills requirements for the industry over the next few years. The review was focused on three areas:

1. Characterise the 2025 UKCS workforce
2. Understand and identify the changing skills requirements by 2025
3. Develop a UKCS Skills Strategy in support of the industry's future skills need

The characterisation of the 2025 workforce was based on the comprehensive data collected in the 2018 UKCS Workforce Dynamics Review. The workforce data-set now comprises c. 35,000 roles, representing c. 50% of the operator roles in the UKCS, c. 16% of the supply chain roles and over 20% of the total UKCS direct and indirect workforce. The 2025 workforce characterisation included an assessment of net industry attrition and retirements, offset by new people joining the industry (replacing both existing roles and taking on roles, which currently do not yet exist).

Around 1,000 people from over 140 different organisations across 22 job families completed the UKCS skills survey. The data collected comprised detailed information in terms of key changes projected in the areas of leadership, business and technical skills. The survey data was subsequently analysed by type of role, type of organisation, age, and gender and by job family.

Combining the workforce characterisation (i.e. the number of people required by job family) and the changing skills requirement (i.e. the changing skills by job family), provided a high level skills demand profile for the industry. The demand picture reflected both those already working in the industry requiring a degree of upskilling or reskilling and those who are projected to enter the industry, requiring new skills. The demand picture took into account that some people will need to be trained to domain expert level (super users), while for others a more basic knowledge will be sufficient.

Disclaimer

In the preparation of this report ("Report"), OPITO and Robert Gordon University ("RGU") have used information and images provided by companies, individuals and a wide range of other industry sources (including web research, public-domain information sources, survey data and OPITO's and RGU's own internal sources) ("Information") in order to build the knowledge and to enable the delivery of the Report.

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Acknowledgement

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